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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,353	07/30/2003	Zohar Bogin	42P9412D	3467
8791	7590	08/23/2004	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			MCLEAN MAYO, KIMBERLY N	
			ART UNIT	PAPER NUMBER
			2187	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/631,353		BOGIN ET AL.	
	Examiner		Art Unit	
	Kimberly N. McLean-Mayo		2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on July 30, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/30/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The enclosed detailed office action is in response to the Application and Information Disclosure Statement submitted on July 30, 2003.

Priority

2. Acknowledgment is made of applicant's claim for domestic priority under 35 U.S.C. 121.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Proebsting (USPN: 6,356,485 B1) in view of Loo et al. (USPN: 5,845,325).

Regarding claims 1, 4, 6, 7 and 9, Proebsting discloses an apparatus comprising a write cache storage to store write data (Abstract; C 3, L 21-22; C 27, L 19-21; C 114, L 23-25; Figure 1); a flush dispatcher coupled to the write cache storage to dispatch the write data to memory (internal write operation control circuit; C 114, L 42-46); control logic to select a first write data with a first address in the write cache storage for dispatching (comprised of write decision circuit, write data merging circuit); determining if a second write data in the write cache has a second address within a predetermined range of the first address (C 114, L 26-33; write decision circuit); and dispatch the first and the second write data if the second address is within the predetermined

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range of the first address (C 114, L 34-41; write data merging circuit dispatches data to the flush dispatcher/internal write operation control circuit). Proebsting does not disclose determining if a second write data in the write cache has a second address within a programmable range of the first address and dispatching the first and the second write data if the second address is within the programmable range of the first address. However, Loo teaches the concept of determining if a second write data in the write cache has a second address within a programmable range of the first address and dispatching the first and the second write data if the second address is within the programmable range of the first address (C 6, L 18-21, L 46-48; C 7, L 1-3 - the address range is the range of the segment or page, which is specifiable and thereby programmable). This feature taught by Loo provides flexibility by dynamically specifying a range of cache data lines to flush. In Proebsting's system the address range is fixed. Hence, it would have been obvious to one of ordinary skill in the art to use Loo's teachings in the system taught by Proebsting for the desirable purpose of flexibility. Additionally, Proebsting does not explicitly disclose a write cache storage for storing cache lines of write data. However, caches are well known in the art for storing data and it is well known that cache memory is faster than DRAM (memory used in Proebsting's system). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a write cache for storing cache lines of write data for the desirable purpose of improved performance afforded by using a faster memory. Additionally, with respect to claim 7, it would have been obvious to one of ordinary skill in the art to store instructions on a machine readable medium which when executed by a processor causes the processor to perform the above functions. Proebsting discloses a hardware implementation of

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the above functions. However, it is known in the art to implement functions in software (computer readable code) on a machine-readable medium for portability.

Regarding claims 3, 5 and 8, Proebsting discloses the limitations cited above in claims 1, 4 and 7, however, Proebsting does not explicitly disclose selecting an oldest of the plurality of cache lines. Official notice is taken that this concept is well known in the art as a least recently used algorithm for removing cache lines. This algorithm is well known for its simple and efficient implementation. Hence it would have been obvious to one of ordinary skill in the art to use a least recently used algorithm in Proebsting's system, wherein an oldest cache line is selected, for the desirable purpose of simplicity and efficiency.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 703-308-9592. The examiner can normally be reached on M (10:00 - 6:30); Tues, Thr (10:00 - 4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 703-308-1756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KIMBERLY MCLEAN-MAYO
PRIMARY EXAMINER

Kimberly N. McLean-Mayo
Examiner
Art Unit 2187

KNM

August 20, 2004